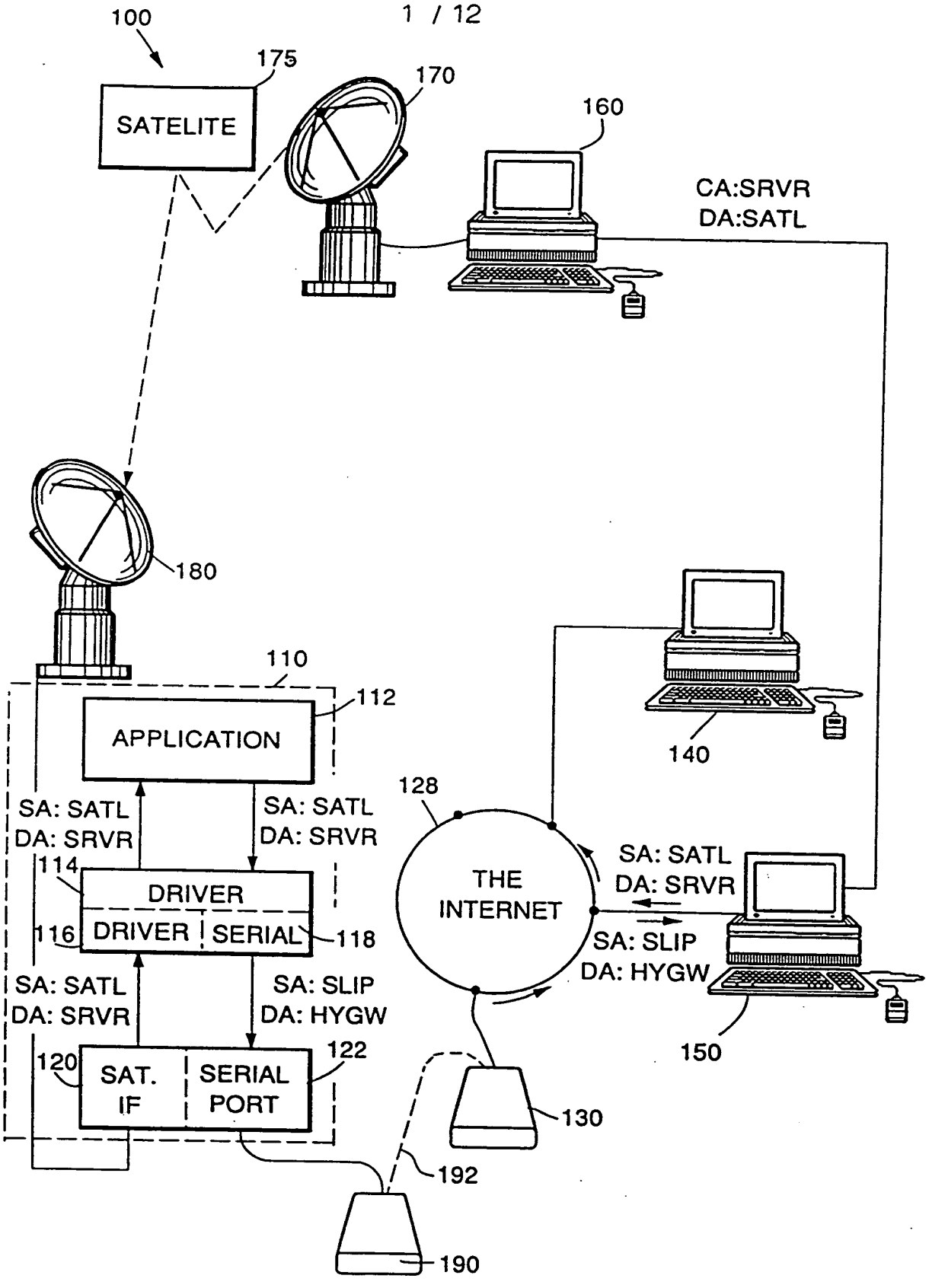

100
175
SATELITE
170
160
CA:SRVR
DA:SATL
180
110
112
APPLICATION
SA: SATL
DA: SRVR
SA: SATL
DA: SRVR
114
DRIVER
116
DRIVER
SERIAL
118
SA: SATL
DA: SRVR
SA: SLIP
DA: HYGW
120
SAT.
IF
SERIAL
PORT
122
140
128
THE
INTERNET
SA: SATL
DA: SRVR
SA: SLIP
DA: HYGW
150
130
192
190

FIG. 1.

FIG. 2.

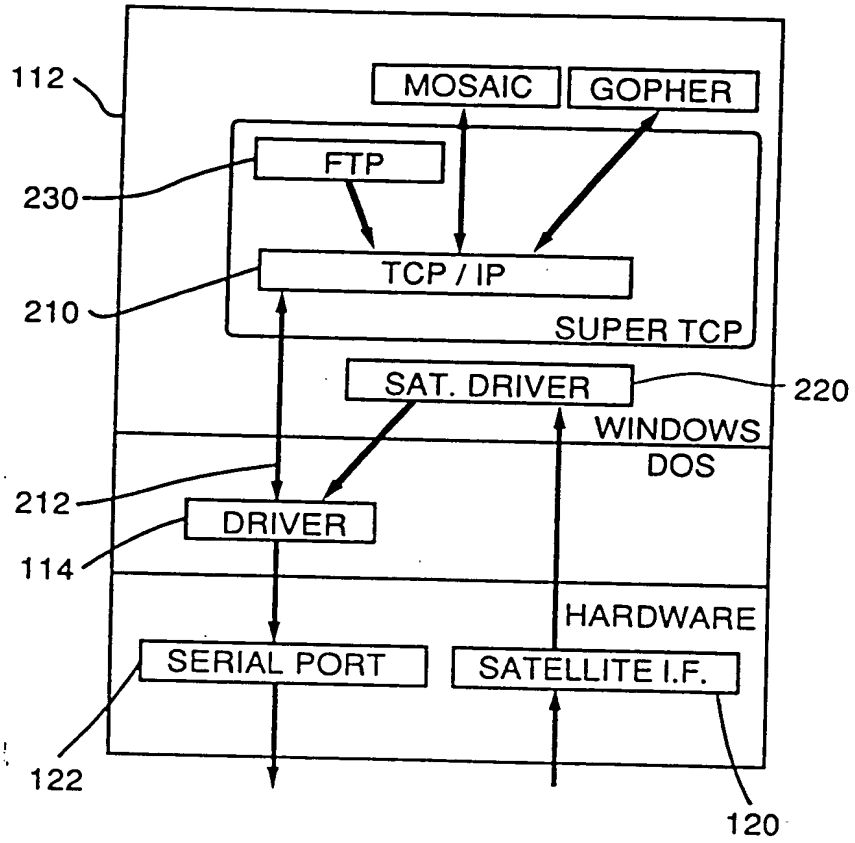


FIG. 3.

310

NORMAL IP PACKET

VERS	HLEN	SERVICE TYPE	TOTAL PACKET LENGTH
IDENTIFICATION NUMBER		FLAGS	FRAGMENT OFFSET
TIME TO LIVE	PROTOCOL	HEADER CHECKSUM	
SOURCE IP ADDRESS			
DESTINATION IP ADDRESS			
IP OPTIONS (IF ANY)			PADDING
DATA			

BIT 0 BIT 32

FIG. 4.

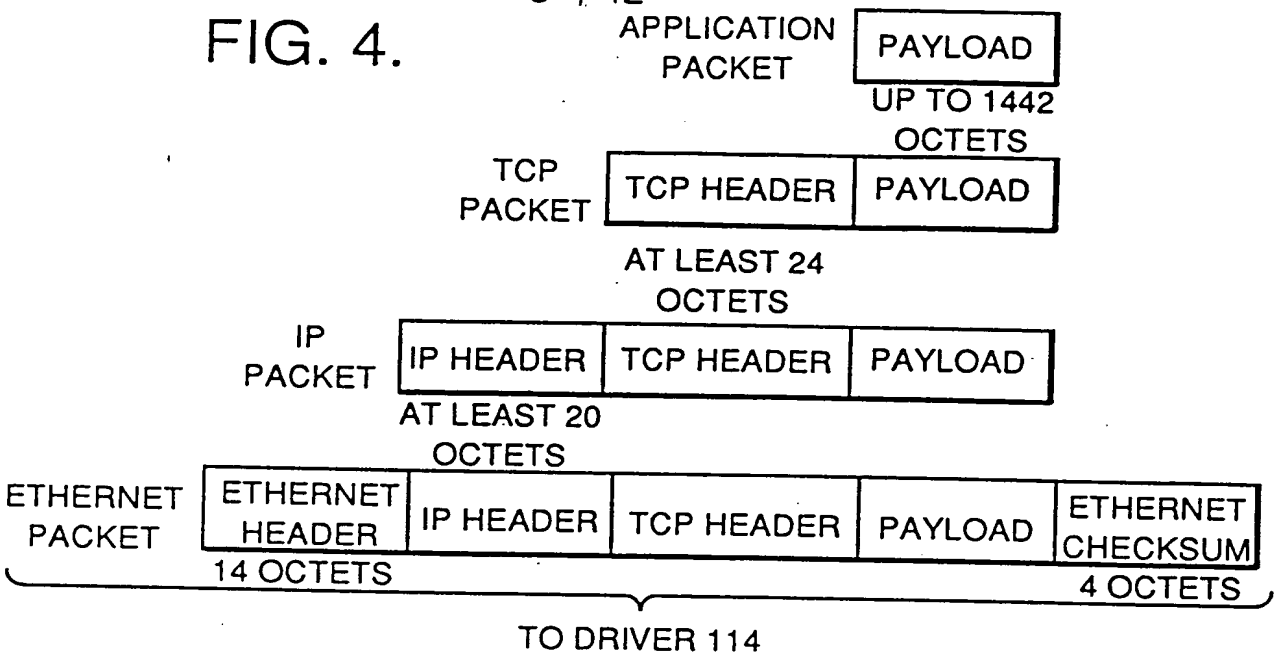
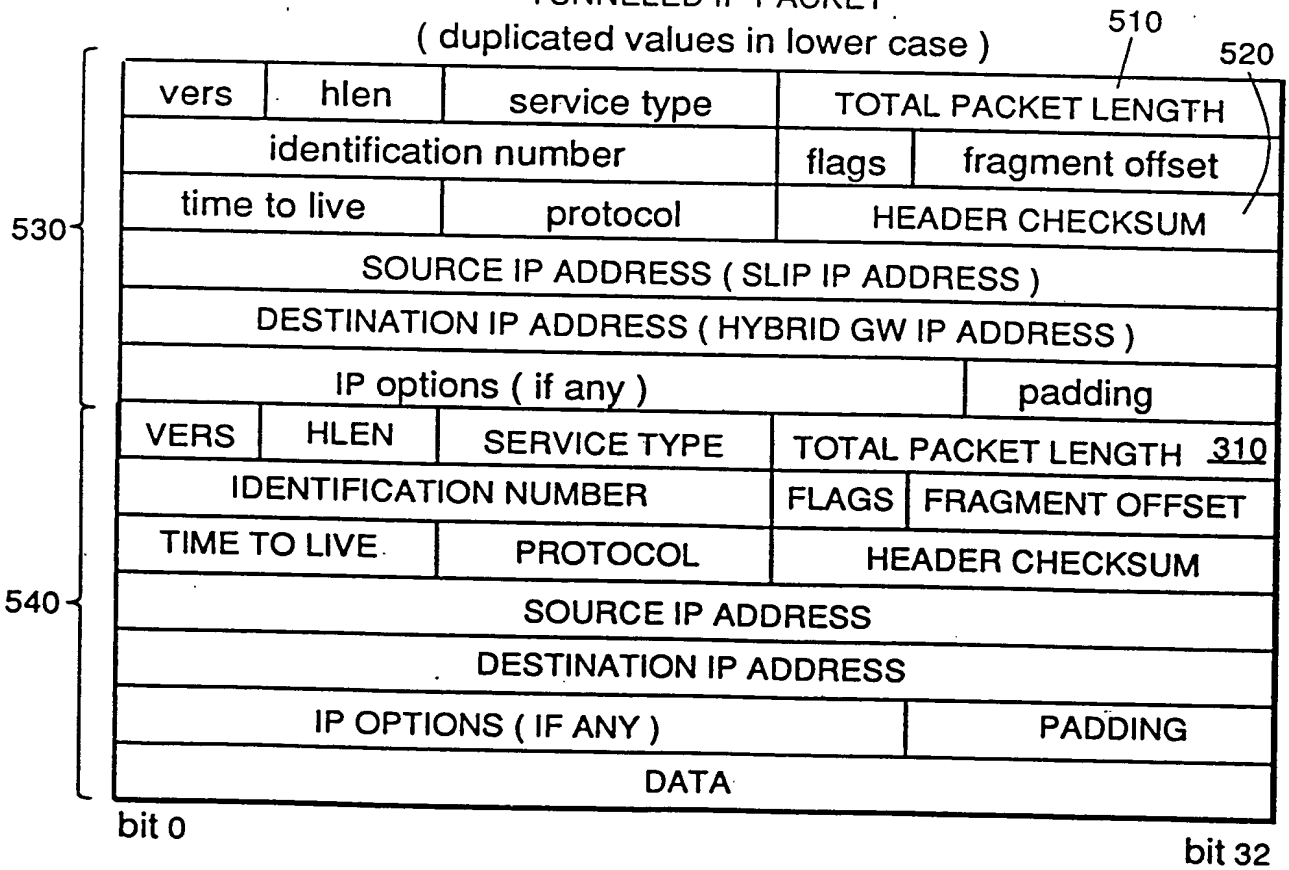


FIG. 5.

TUNNELED IP PACKET
(duplicated values in lower case)



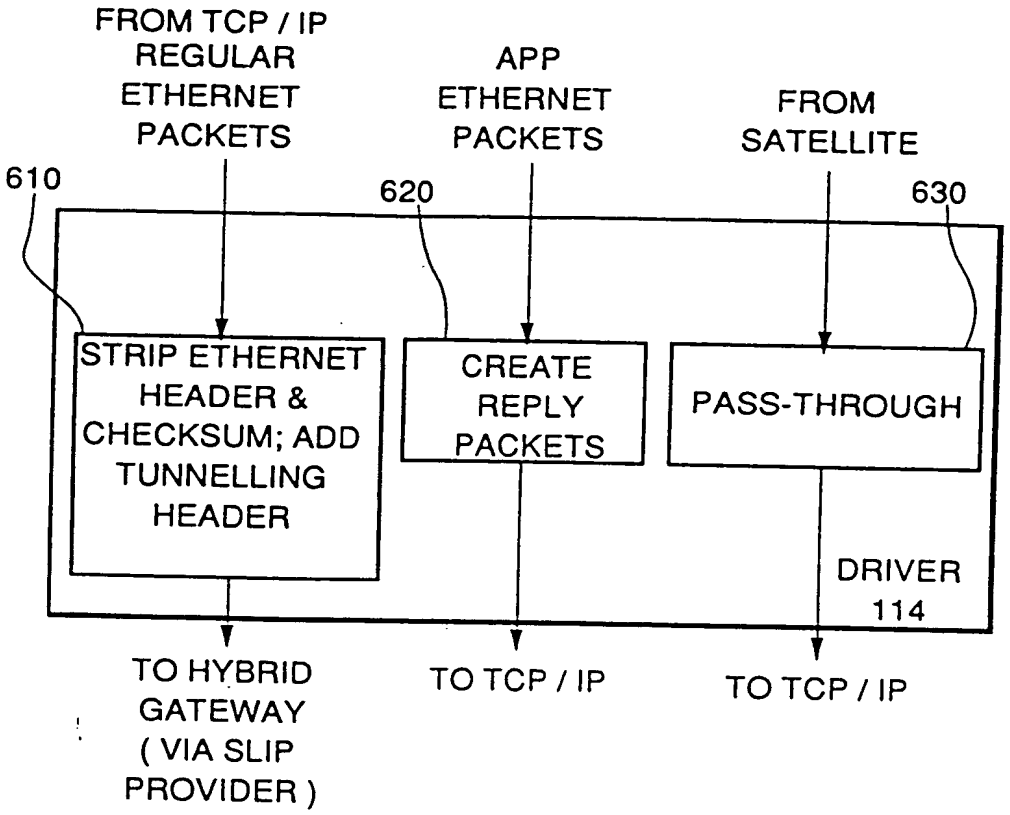

FROM TCP / IP REGULAR ETHERNET PACKETS
APP ETHERNET PACKETS
FROM SATELLITE
610
620
630
STRIP ETHERNET HEADER & CHECKSUM; ADD TUNNELLING HEADER
CREATE REPLY PACKETS
PASS-THROUGH
DRIVER 114
TO HYBRID GATEWAY (VIA SLIP PROVIDER)
TO TCP / IP
TO TCP / IP

FIG. 6.

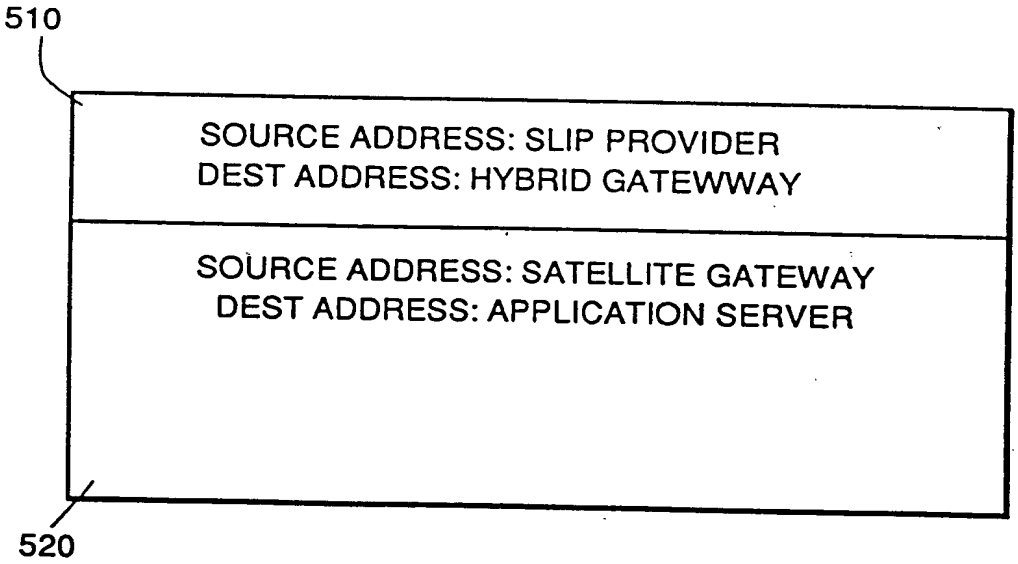

510
SOURCE ADDRESS: SLIP PROVIDER
DEST ADDRESS: HYBRID GATEWWAY
SOURCE ADDRESS: SATELLITE GATEWAY
DEST ADDRESS: APPLICATION SERVER
520

FIG. 7.

FIG. 8.

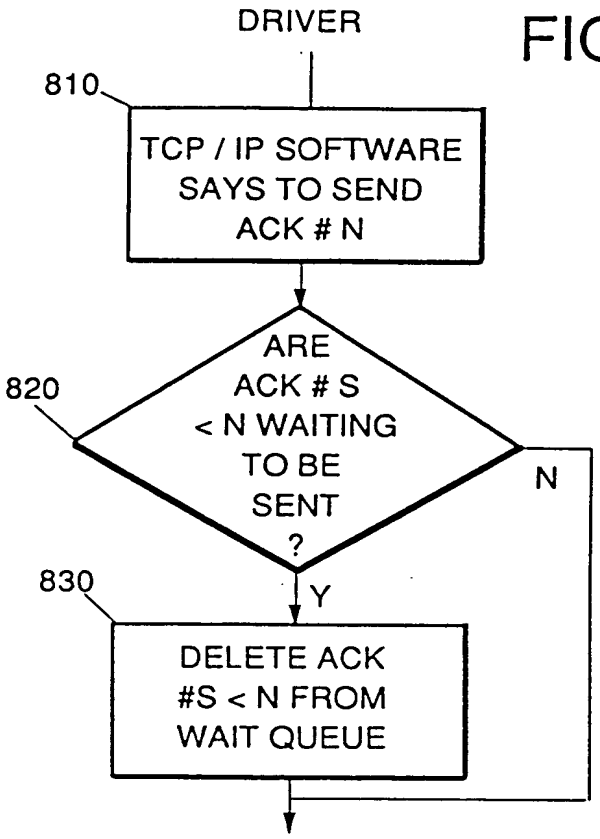

DRIVER
810
TCP / IP SOFTWARE SAYS TO SEND ACK # N
820
ARE ACK # S < N WAITING TO BE SENT ?
N
Y
830
DELETE ACK #S < N FROM WAIT QUEUE

FIG. 9.

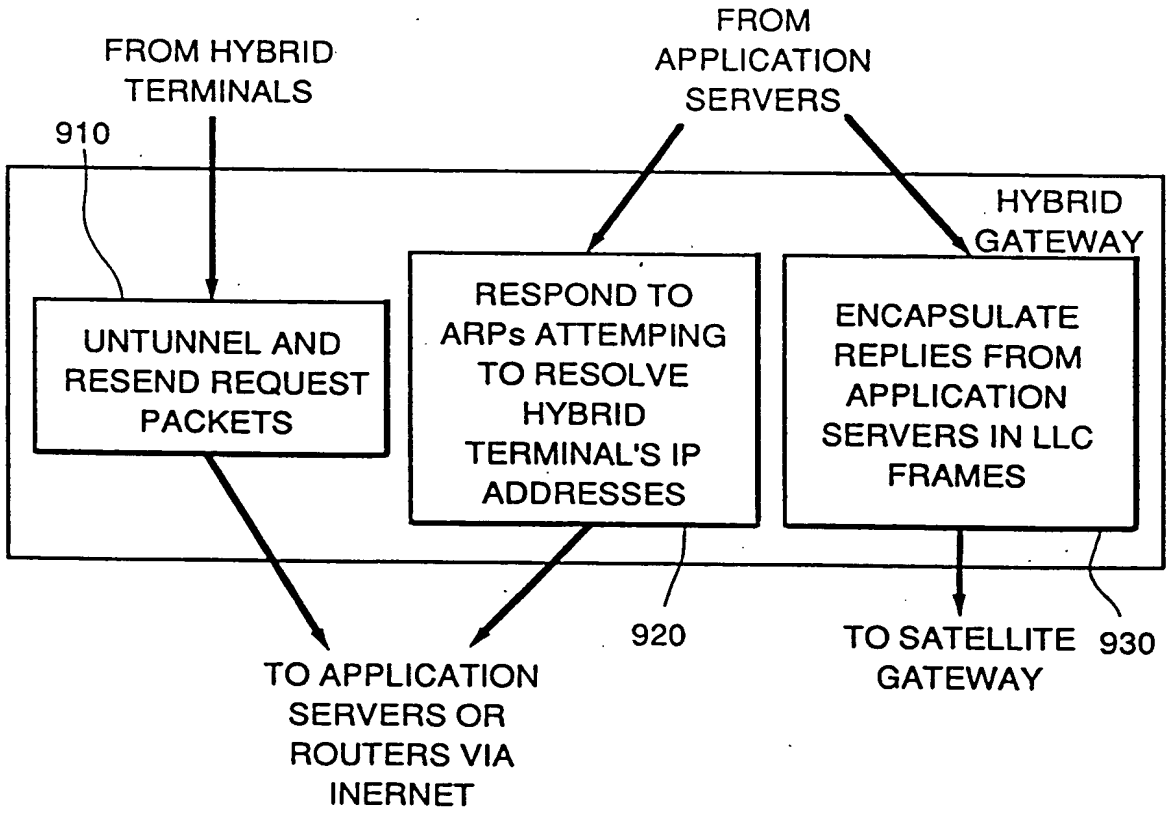

FROM HYBRID TERMINALS
FROM APPLICATION SERVERS
910
HYBRID GATEWAY
UNTUNNEL AND RESEND REQUEST PACKETS
RESPOND TO ARPs ATTEMPING TO RESOLVE HYBRID TERMINAL'S IP ADDRESSES
ENCAPSULATE REPLIES FROM APPLICATION SERVERS IN LLC FRAMES
920
930
TO APPLICATION SERVERS OR ROUTERS VIA INERNET
TO SATELLITE GATEWAY

FIG. 10.

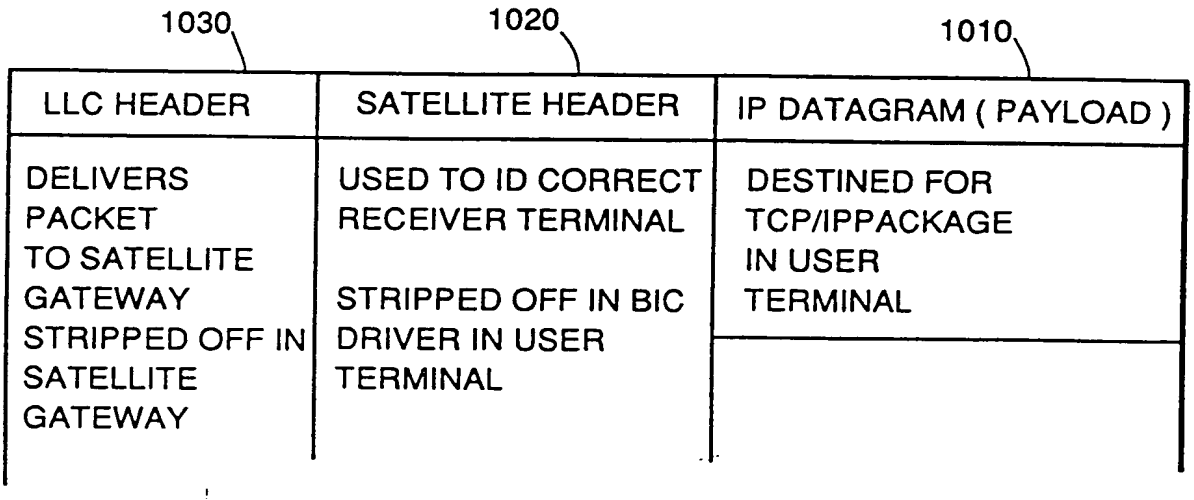

1030
1020
1010
LLC HEADER
SATELLITE HEADER
IP DATAGRAM (PAYLOAD)
DELIVERS PACKET TO SATELLITE GATEWAY STRIPPED OFF IN SATELLITE GATEWAY
USED TO ID CORRECT RECEIVER TERMINAL
STRIPPED OFF IN BIC DRIVER IN USER TERMINAL
DESTINED FOR TCP/IPPACKAGE IN USER TERMINAL

FIG. 11.

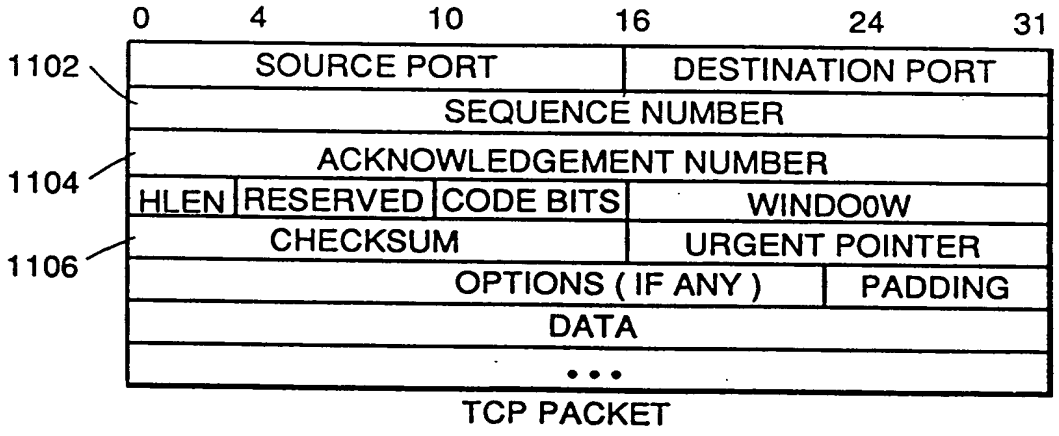

0
4
10
16
24
31
1102
SOURCE PORT
DESTINATION PORT
SEQUENCE NUMBER
1104
ACKNOWLEDGEMENT NUMBER
HLEN
RESERVED
CODE BITS
WINDOW
1106
CHECKSUM
URGENT POINTER
OPTIONS (IF ANY)
PADDING
DATA
• • •
TCP PACKET

FIG. 12.

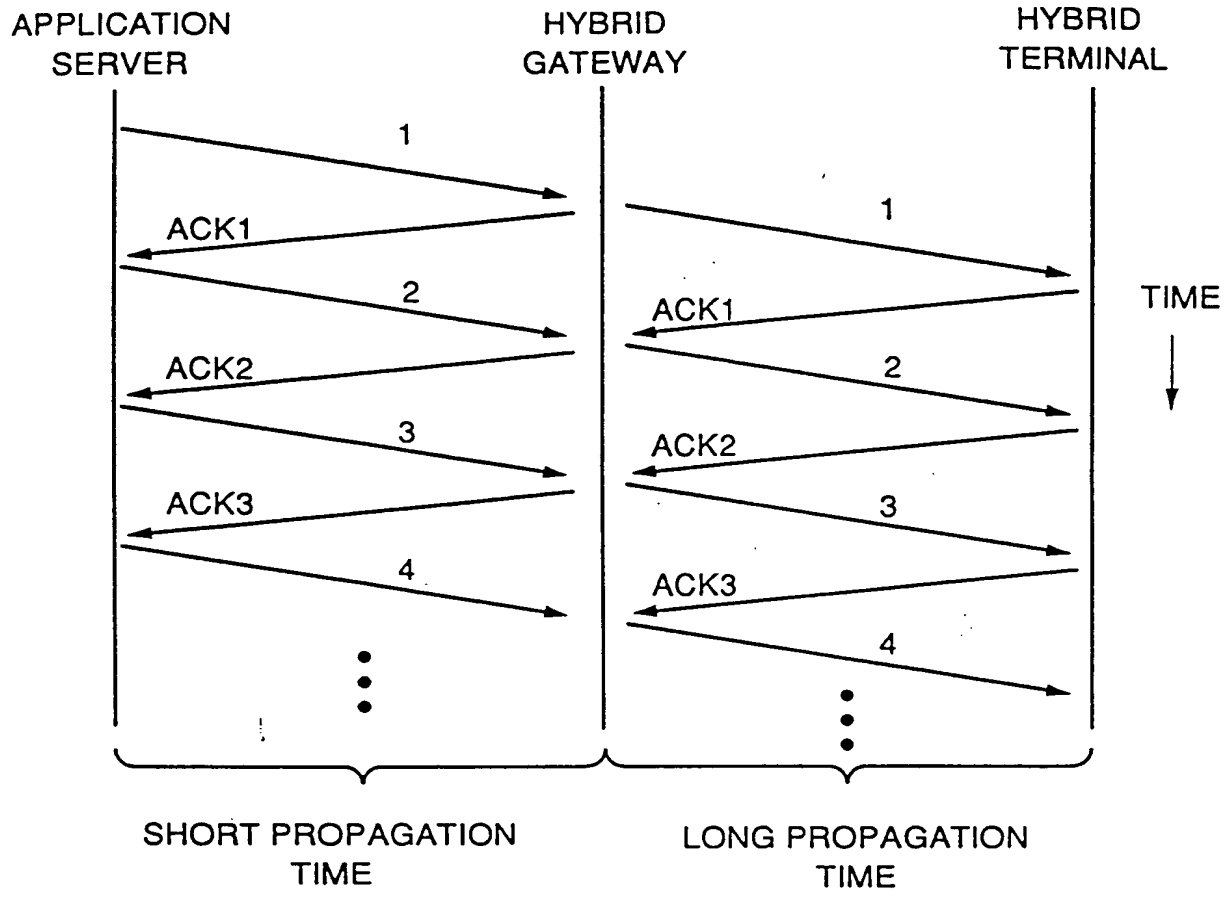


FIG. 13a.

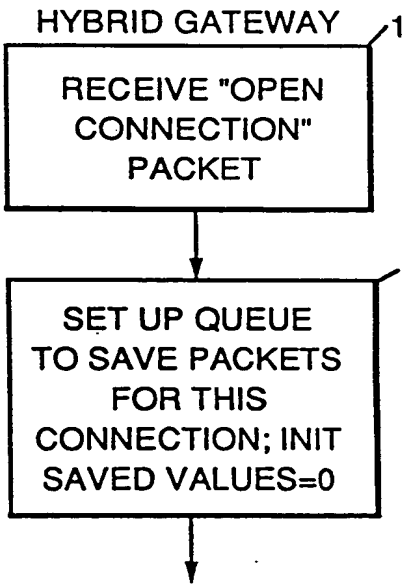


FIG. 13b.

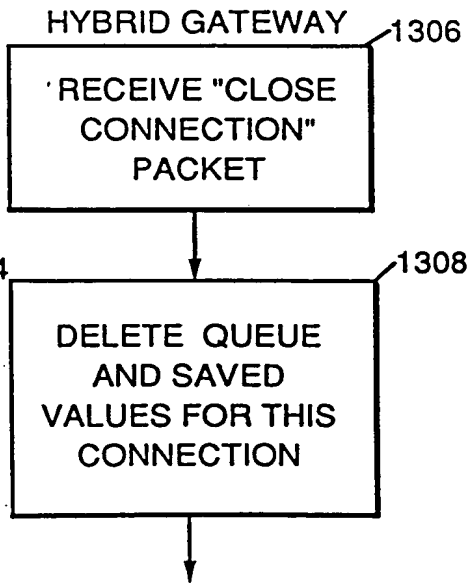


FIG. 13c.

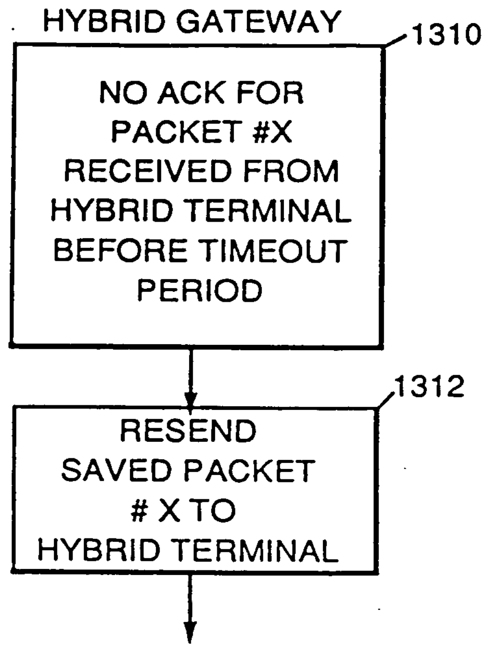


FIG. 13d.

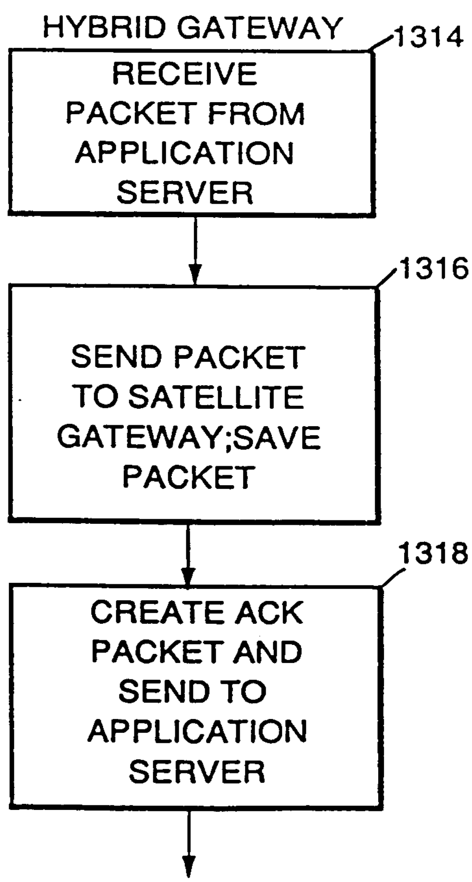
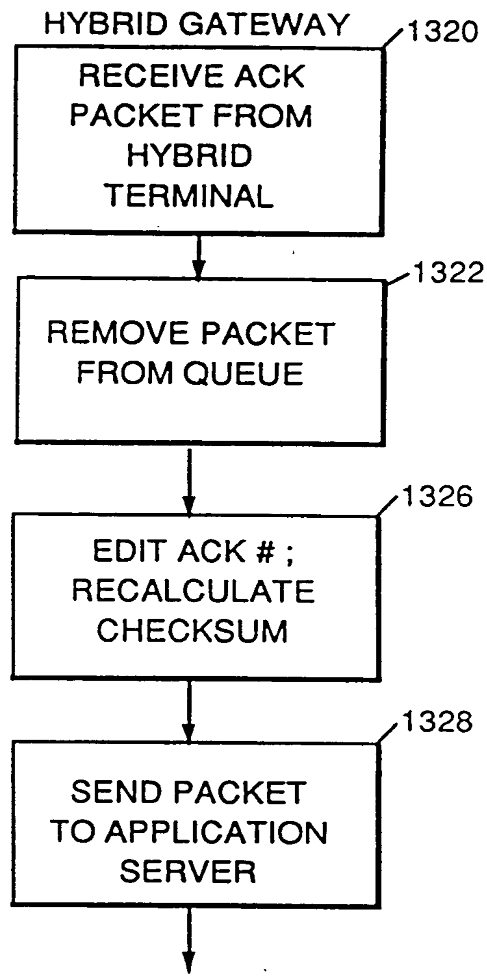


FIG. 13e.



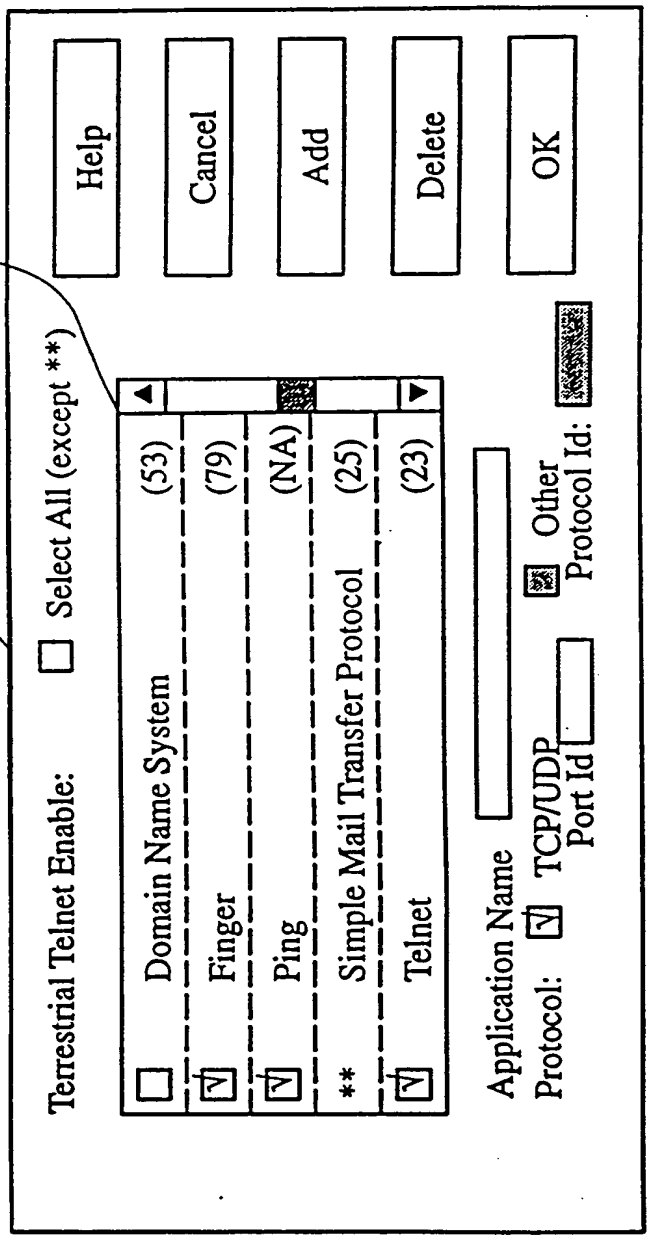

1410
1412
Terrestrial Telnet Enable:
Select All (except **)
Help
Cancel
Add
Delete
OK
Domain Name System (53)
Finger (79)
Ping (NA)
** Simple Mail Transfer Protocol (25)
Telnet (23)
Application Name
Protocol:
TCP/UDP
Port Id
Other
Protocol Id:

FIG. 14

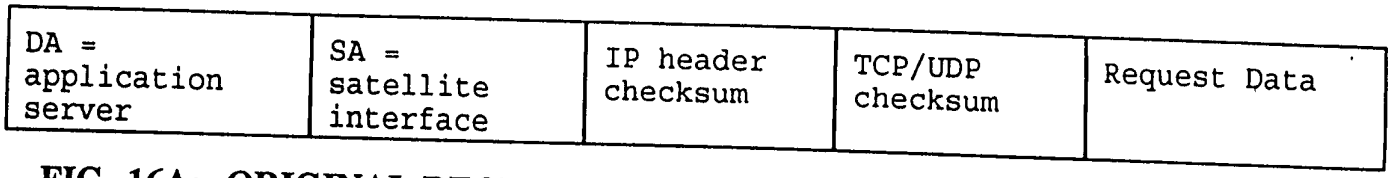
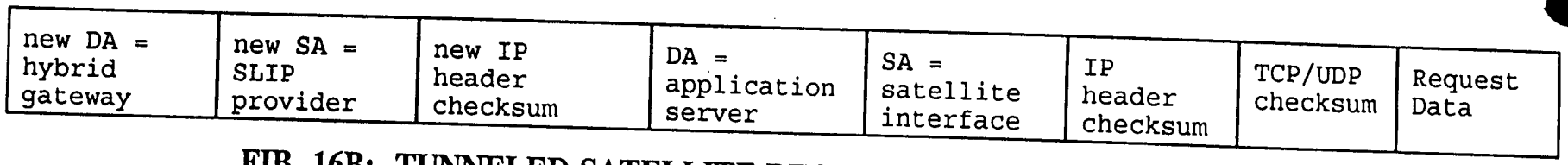


FIG. 16A: ORIGINAL REQUEST PACKET



FIB. 16B: TUNNELED SATELLITE REQUEST PACKET

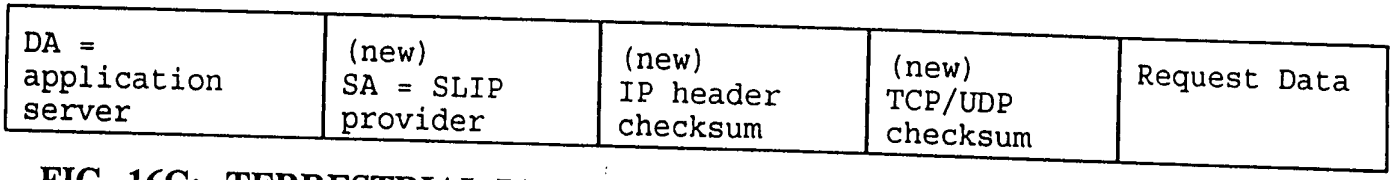


FIG. 16C: TERRESTRIAL REQUEST PACKET

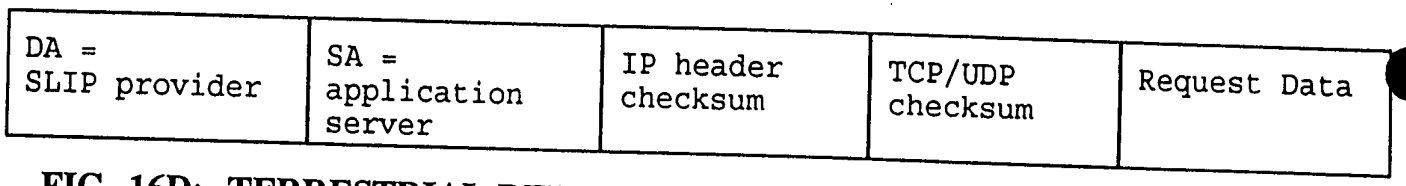


FIG. 16D: TERRESTRIAL REPLY PACKET

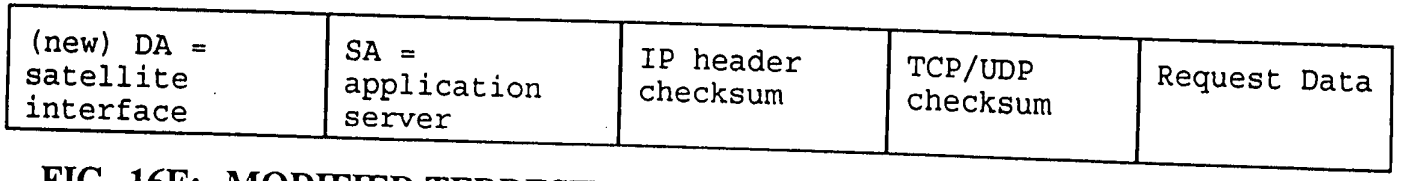


FIG. 16E: MODIFIED TERRESTRIAL REPLY PACKET

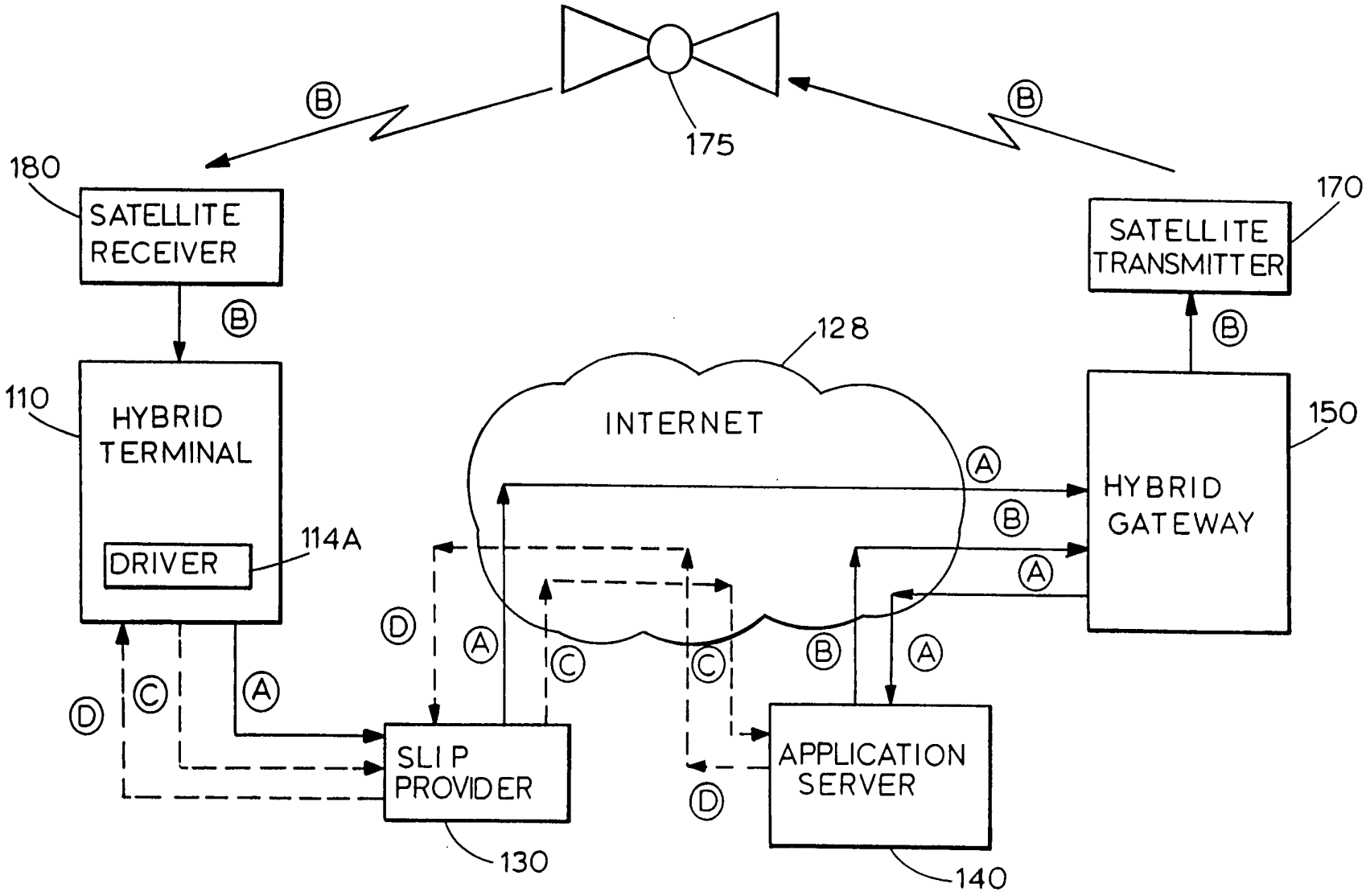

175
B
B
180
SATELLITE RECEIVER
B
110
HYBRID TERMINAL
DRIVER
114A
128
INTERNET
170
SATELLITE TRANSMITTER
B
150
HYBRID GATEWAY
A
B
A
D
A
C
C
B
A
D
C
A
SLIP PROVIDER
130
D
APPLICATION SERVER
140

FIG. 15

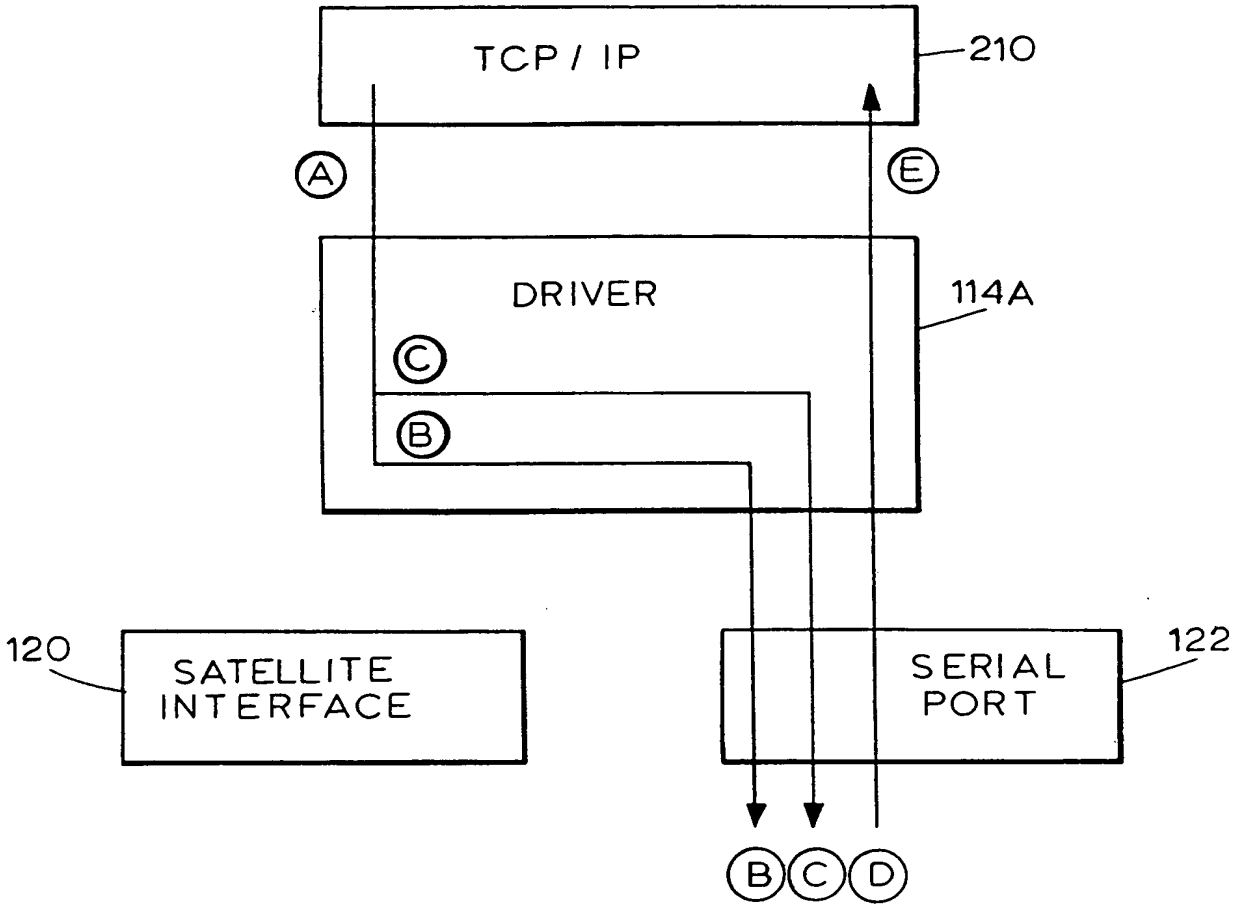

TCP / IP
210
A
E
DRIVER
114A
C
B
120
SATELLITE INTERFACE
SERIAL PORT
122
B C D

FIG. 16